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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,862	12/10/2003	Torsten Berger	SNS-013	8061

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EXAMINER	
CASCHERA, ANTONIO A	

ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,862	BERGER ET AL.	
	Examiner	Art Unit	
	Antonio A. Caschera	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 20 July 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 56-76 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 56-76 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 06 June 2006 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 56, 57 and 65-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumesny et al. (U.S. Pub 2002/0154132 A1) in view of Piponi et al. ("Seamless texture mapping of subdivision surfaces by model pelting and texture blending," SIGGRAPH 2000. ACM Press/Addison-Wesley Publishing Co. New York, NY. pgs. 471-478. ISBN:1-58113-208-5).

In reference to claims 56 and 70, Dumesny et al. discloses a user interface, method and computer system operating a user interface, for applying a texture to a 3D graphic object and modifying the texture using several techniques (see paragraph 9, lines 1-5, paragraph 13, lines 1-7 and paragraph 76, lines 7-11). Dumesny et al. discloses allowing the user to select a defined region of a 3D graphic object and map the selected regions or polygons to a texture map (see paragraphs 13, 44, 47 and 48). Dumesny et al. discloses that after the user has selected the defined region in object space, an associated square region is defined and displayed in texture space (see paragraph 38, lines 5-9 and #110, 111 of Figure 11A). Note, the Office interprets such texture space square region functionally equivalent to Applicant's "planar mesh" limitation. Dumesny et al. further discloses allowing the user to adjust the square region size and shape, in

texture space, which inherently alters the mapping of the texture to the object space defined region (see paragraph 48, last 3 lines and paragraph 49). Further note, since the user defined region of the object is only part of the object and the alteration of the texture square region modifies the mapping onto such a user defined region, the Office interprets such a user defined region functionally equivalent to the "patch" of Applicant's claims. Dumesny et al. also discloses assigning texture map coordinate values to the corresponding polygons since when Dumesny et al. performs texture mapping, coordinates of object space and texture map space are associated and texture values are therefore also inherently associated (see paragraphs 4 and 5). Note, the Office interprets the "graphical value" of Applicant's claim functionally equivalent to the texture value comprised within a texture map as seen in Figure 4 of Dumesny et al.. Further in reference to claim 70, Dumesny et al. discloses a storage medium or device, such as a CD-Rom, hard disk or magnetic disk for storing computer programs which, when executed, perform the above disclosed methods (see paragraphs 75-76). Also, Dumesny et al. discloses a processor for executing the above computer programs (see paragraph 75). Dumesny et al. discloses that after the user has selected the defined region in object space, an associated square region is defined and displayed in texture space (see paragraph 38, lines 5-9 and #110, 111 of Figure 11A). Dumesny et al. further discloses allowing the user to adjust the square region size and shape, in texture space, which inherently alters the mapping of the texture to the object space defined region (see paragraph 48, last 3 lines and paragraph 49). Dumesny et al. explicitly discloses, in the example of paragraph 49, that as the user transforms the square region, making it smaller in size, the object space user defined region is updated in real time so that the texture map is now stretched over the user defined region (see last 8 lines of paragraph 49). The Office

interprets that if reducing the size of the texture space square region results in a loss of quality, because of stretching the texture map over the object, increasing the size of the texture space would conversely provide the effect of gaining quality since a smaller area of the object region would be covered by the texture. Dumesny et al. explicitly discloses allowing a user to select the region via one or more of particular polygons of a 3D graphic object to texture map data thereto (see paragraphs 44 and 47). Further, Dumesny et al. explicitly discloses that only if no polygons are selected by a user that all polygons forming the 3D object are subsequently textured (see last 3 lines of paragraph 44). Dumesny et al. does not explicitly disclose the mapping models based on a plurality of points of the mesh connected by mechanical modeling elements. Piponi et al. discloses a method for finding both optimal and intuitive texture mapping over almost all of an entire subdivision surface and combining the mappings together to produce a seamless result (see last 4 lines of the abstract, pg. 471). Piponi et al. discloses the method to, for example, involve adding springs to the boundary of a disk with opposing ends of the springs attached to a surrounding fixed frame (see pg. 473, left column last paragraph "There are a number..." and Figure 2.). Piponi et al. also explicitly discloses minimizing the energy of the collection of springs using further derived equations of motion, adding damping terms and running a dynamics solver until a steady state is achieved (see pg. 473, left column, last paragraph, lines 1-10 and Figure 2). Note, the Office interprets such "springs" of Piponi et al. functionally equivalent to Applicant's "mechanical modeling elements" since further claims 65 and 73 define the "mechanical modeling elements" as such. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texture mapping techniques of subdivision surfaces of Piponi et al. with the graphical object texturing techniques of

Dumesny et al. in order to create a seamless texture mapping of polygonal models and subdivision surfaces while still creating a system that is efficient in its processing and intuitive for users to operate (see pg. 471, right column, "Introduction" lines 6-8 of Piponi et al. & see pg. 472, left column, lines 23-40, "Using a solid..." of Piponi et al.). (see *Response to Arguments* below).

In reference to claims 57 and 71, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claims 56 and 70 respectively above in addition, Dumesny et al. discloses graphically rendering the object in real-time as the user modifies texture values (see paragraph 49).

In reference to claims 65, 66, 73 and 74, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claims 56 and 70 respectively above. Piponi et al. discloses the method to, for example, involve adding springs to the boundary of a disk with opposing ends of the springs attached to a surrounding fixed frame (see pg. 473, left column last paragraph "There are a number..." and Figure 2.).

In reference to claims 67 and 75, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claims 56 and 70 respectively above. Piponi et al. also explicitly discloses minimizing the energy of the collection of springs using further derived equations of motion, adding damping terms and running a dynamics solver until a steady state is achieved (see pg. 473, left column, last paragraph, lines 1-10 and Figure 2).

In reference to claims 68 and 76, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claims 56 and 70 respectively above. Dumesny et al. discloses allowing

the user to select a defined region of a 3D graphic object and map the selected regions or polygons to a texture map (see paragraphs 13, 44, 47 and 48).

In reference to claim 69, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above. Dumesny et al. discloses allowing the user to select a defined region of a 3D graphic object and map the selected regions or polygons to a texture map (see paragraphs 13, 44, 47 and 48). Note, the Office sees no indication in Dumesny et al. of performing geometric projection when mapping the texture onto the 3D object in Dumesny et al.

In reference to claim 72, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 71 above in addition, Dumesny et al. explicitly discloses utilizing a CRT as the display device (see paragraph 2).

2. Claims 58-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumesny et al. (U.S. Pub 2002/0154132 A1), Piponi et al. ("Seamless texture mapping of subdivision surfaces by model pelting and texture blending," SIGGRAPH 2000. ACM Press/Addison-Wesley Publishing Co. New York, NY. pgs. 471-478. ISBN:1-58113-208-5) and further in view of Leather et al. (U.S. Patent 6,707,458 B1).

In reference to claim 58, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 57 above however, neither Dumesny et al. nor Piponi et al. explicitly disclose modifying a voxel representation of the object according to the texture values. Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). Leather et al. further discloses performing embossing type bump mapping effects on incoming processed texture coordinates (see columns 9-10, lines 56-3), the bump

mapping further comprising a bump mapping displacement associated with each texture coordinate (see column 10, lines 8-20). Note, the Office interprets the depth/height of the object being altered using the texture bump mapping displacement values of Leather et al., equivalent to the modifying of a voxel representation of the object using the "graphical values" of Applicant's claim. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texture tiling techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order to create realistic looking surface detail on rendered objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 59, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above however, neither Dumesny et al. nor Piponi et al. explicitly disclose the texture being of a tiled type. Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texture tiling techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order to create realistic looking surface detail on rendered objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 60, Dumesny et al., Piponi et al. and Leather et al. disclose all of the claim limitations as applied to claim 59 above. Leather et al. discloses a method and apparatus

for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). Leather et al. also explicitly discloses improving on the past technique of texture tiling, which used to draw a polygon for each desired tile meaning each tile was constrained to align with a polygon (see column 4, lines 17-20).

In reference to claim 61, Dumesny et al., Piponi et al. and Leather et al. disclose all of the claim limitations as applied to claim 59 above. Dumesny et al. discloses graphically rendering the object in real-time as the user modifies texture values (see paragraph 49). Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A).

In reference to claim 62, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above. Dumesny et al. discloses assigning texture map coordinate values to the corresponding polygons since when Dumesny et al. performs texture mapping, coordinates of object space and texture map space are associated and texture values are therefore also inherently associated (see paragraphs 4 and 5). Note, the Office interprets the "graphical value" of Applicant's claim functionally equivalent to the texture value comprised within a texture map as seen in Figure 4 of Dumesny et al.. Further, the texture value output from a texture map is well known in the art to be a color value as explicitly shown in Leather et al. (see Figures 7A and 7B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the texture value, associated with the selected texture coordinate of a texture map, of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al., with a color value since it is well known in the art that a texture map

may hold color values, as shown in Leather et al. (see column 10, lines 31-36 of Leather et al.). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texturing techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order to create realistic looking surface detail on rendered objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 63, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above. Although Dumesny et al. discloses assigning texture map coordinate values to corresponding polygons (see paragraphs 4 and 5), neither Dumesny et al. nor Piponi et al. explicitly disclose the texture map comprising an embossing pattern. Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). Leather et al. further discloses performing embossing type bump mapping effects on incoming processed texture coordinates (see columns 9-10, lines 56-3), the bump mapping further comprising a bump mapping displacement associated with each texture coordinate (see column 10, lines 8-20 and Figures 7A, 7B). Further note, the Office interprets the displacement value of Leather et al. to inherently define an adjustment along a normal to the surface of a virtual object of Applicant's claim. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texturing techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order to create realistic looking surface detail on rendered

objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 64, Dumesny et al., Piponi et al. and Leather et al. disclose all of the claim limitations as applied to claim 63 above. Dumesny et al. discloses graphically rendering the object in real-time as the user modifies texture values (see paragraph 49). Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A).

Response to Arguments

3. Applicant's arguments filed 07/20/07 have been fully considered but they are not persuasive.

In reference to claims 56-76, Applicant argues that none of the cited prior art of record explicitly disclose the newly amended limitation of the user-defined region being of arbitrary shape (see pages 7-9 of Applicant's Remarks).

Firstly, in response to applicant's arguments, the recitation "...in an arbitrarily-shaped, user-defined region..." in independent claim 56 has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

None-the-less, in response to the above argument as per claim 56 (and all dependent upon claim 56 claims) along with claim 70 (and all dependent upon claim 70 claims), as stated in the above rejection of claims 68 and 76, Dumesny et al. explicitly discloses allowing a user to select a region via one or more of particular polygons of a 3D graphic object to texture map data thereto (see paragraphs 44 and 47). Further, Dumesny et al. explicitly discloses that only if no polygons are selected by a user that all polygons forming the 3D object are subsequently textured (see last 3 lines of paragraph 44). Therefore, the Office interprets at least Dumesny et al. of the combination of Dumesny et al. and Piponi to disclose the argued feature as seen above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781.

The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung, can be reached at (571) 272-7794.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

571-273-8300 (Central Fax)

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (571) 272-2600.

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9/12/07

KEE M. TUNG
SUPERVISORY PATENT EXAMINER